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**DE-C- 129 072**  
**DE-U- 8 615 237**  
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## Description

The invention relates to an electric lamp comprising

a translucent lamp vessel which is sealed in a vacuum-tight manner and has a seal at its ends,

an electric element in the lamp vessel,

current supply conductors which are passed to the electric element through a respective seal,

ceramic lamp caps each having a cavity at least partly accommodating a respective seal,

electrically conducting cables having a first end secured to a respective current supply conductor, said cables being passed to the exterior through an opening in the relevant lamp cap transversely to the relevant current supply conductor.

A lamp of this type is known from and described in GB-A-2 203 020.

In the known lamp the ceramic lamp caps are secured to the seals of the lamp vessel by means of cement. It has been found that the seals in such a lamp may break owing to mechanical stresses caused by the use of cement. In fact, lamps to which cables are secured are often used for purposes at which the seals assume a relatively high temperature during operation of the lamp. The lamp may also break easily when it is placed in a luminaire holding the lamp at its lamp caps.

It is an object of the invention to provide a lamp of the type described in the opening paragraph, which has a simple lamp cap secured without the use of cement.

According to the invention this object is realised in that each ceramic lamp cap comprises

a duct which is accessible from the cavity of the lamp cap and accommodates the relevant current supply conductor,

a recess which is transverse to the duct and accommodates the first end of the relevant cable, said recess crossing the duct at a distance from the cavity,

a bore which is transverse to the recess and the duct and in which the recess crosses the duct and in which the electric cable is secured to the current supply conductor.

In the lamp according to the invention a lamp cap is secured to the lamp vessel when the cable is secured to the relevant current supply conductor. The lamp cap has the bore to enable the cable to be secured while the lamp cap has already been positioned. A welded or soldered joint can be made via this bore. After this joint has been made, the lamp cap and the lamp vessel are undetectably coupled. Consequently, this coupling does not require cement or any other means. The only component that is required is the specially shaped lamp cap.

The lamp cap may laterally surround the seal on only two opposite sides, or, in another embodiment, it may laterally surround the seal circumferentially.

The electric element may be a filament or an electrode pair.

An embodiment of the lamp according to the invention will now be described in greater detail with reference to the accompanying drawing.

In this drawing

Fig. 1 shows a lamp in a side elevation,

Fig. 2 shows a lamp cap of Fig. 1 on a larger scale in a side elevation,

Fig. 3 shows the lamp cap of Fig. 2 in an elevation taken on the line III-III in Fig. 2,

Fig. 4 shows the lamp cap of Fig. 2 in a side elevation taken on the line IV-IV in Fig. 2.

The electric lamp of Fig. 1 has a translucent lamp vessel 1 which is sealed in a vacuum-tight manner and which has seals 2, 3 at its ends. The lamp vessel 1 accommodates a filament 4 to which current supply conductors 5, 6 are connected which are passed through the seals 2, 3, respectively. The lamp has ceramic lamp caps 7, 8 each having a cavity 13 (Fig. 2) which at least partly accommodates a respective seal 2, 3. Electrically conducting cables 9, 10 have a first end 11 secured to a respective current supply conductor 5, 6. The cables 9, 10 are passed to the exterior through an opening in the relevant lamp cap 7, 8 transversely to the relevant current supply conductor 5, 6.

Each ceramic lamp cap 7, 8 has a duct 12 (Figs. 2-4) which is accessible from the cavity 13 of this lamp cap 7, 8 which accommodates a seal 2, 3 (Fig. 1). This duct 12 accommodates the relevant current supply conductor 5, 6. The lamp cap 7, 8 has a recess 14 transverse to the duct 12, which recess 14 accommodates the first end 11 of the relevant cable 9 and crosses the duct 12 at a distance from the cavity 13. The lamp cap 7, 8 also has a bore 15 which is transverse to the recess 14 and the duct 12 in which the recess crosses the duct and in which the current supply conductors 5, 6 are secured to the cables 9, 10, respectively.

The cables 9, 10 are secured to the current supply conductors 5, 6 via the bore 15, after the lamp caps 7, 8 have been arranged on the lamp vessel 1. The cables 9, 10 fix the lamp caps 7, 8 on the lamp vessel 1 without additional means.

The lamp caps 7, 8 laterally surround the respective seals 2, 3 circumferentially because, apart from the duct 12, the cavity 13 is open on one side only.

**Claims**

1. An electric lamp comprising
  - a translucent lamp vessel (1) which is sealed in a vacuum-tight manner and has a seal (2, 3) at its ends,
  - an electric element (4) in the lamp vessel,
  - current supply conductors (5, 6) which are passed to the electric element through the respective seal (2, 3),
  - ceramic lamp caps (7, 8) each having a cavity (13) at least partly accommodating the respective seal,
  - electrically conducting cables (9, 10) having a first end (11) secured to a respective current supply conductor (5, 6), said cables being passed to the exterior through an opening in the relevant lamp cap (7, 8) transversely to the relevant current supply conductor (5, 6), characterized in that each ceramic lamp cap comprises
  - a duct (12) which is accessible from the cavity (13) of the lamp cap and accommodates the relevant current supply conductor,
  - a recess (14) which is transverse to the duct (12) and accommodates the first end (11) of the relevant cable (3), said recess (14) crossing the duct (12) at a distance from the cavity (13),
  - a bore (15) which is transverse to the recess (14) and the duct (12) and in which the recess crosses the duct and in which the electric cable (9, 10) is secured to the current supply conductor (5, 6).
2. An electric lamp as claimed in Claim 1, characterized in that the lamp caps laterally surround the relevant seal circumferentially.

**Patentansprüche**

1. Elektrische Lampe mit einem durchscheinenden Lampenkolben (1), der vakuumdicht abgeschlossen ist und an seinen Enden Abdichtungen (2, 3) hat, mit einem elektrischen Element (4) im Lampenkolben, mit Stromzuführungsleitern (5, 6), die durch die jeweilige Abdichtung (2, 3) nach dem elektrischen Element geführt werden, mit Keramiklampensockeln (7, 8) mit je einem Hohlraum (13) wenigstens zum teilweise Aufnehmen einer betreffenden Abdichtung, mit elektrisch leitenden Kabeln (9, 10), von denen ein erstes Ende (11) an einem jeweiligen Stromzuführungsleiter (5, 6) befestigt ist, wobei die Kabel durch eine Öffnung in dem betreffenden Lampensockel (7, 8) quer zum betreffenden Stromzuführungsleiter (5, 6) herausgeführt sind,

dadurch gekennzeichnet, daß jeder Keramiklampensockel einen Kanal (12), der vom Hohlraum (13) des Lampensockels zugänglich ist und in den der betreffende Stromzuführungsleiter aufgenommen ist, eine Ausnehmung (14), die quer zum Kanal (12) verläuft und in die das erste Ende (11) des betreffenden Kabels (9) aufgenommen ist, wobei die Ausnehmung (14) den Kanal (12) im Abstand vom Hohlraum (13) kreuzt, und eine Bohrung (15) enthält, die quer zur Ausnehmung (14) und zum Kanal (12) verläuft, und in der die Ausnehmung den Kanal kreuzt und das elektrische Kabel (9, 10) am Stromzuführungsleiter (5, 6) befestigt ist.

2. Elektrische Lampe nach Anspruch 1, dadurch gekennzeichnet, daß die Lampensockel seitlich die betreffende Abdichtung an ihrem Umfang umgeben.

**Revendications**

1. Lampe électrique comportant
  - un récipient translucide (1) fermé de façon étanche au vide et présentant une fermeture (2, 3) à ses extrémités,
  - un élément électrique (4) disposé dans le récipient,
  - des conducteurs d'alimentation de courant (5, 6) s'étendant vers l'élément électrique en passant par une fermeture respective (2, 3),
  - des culots céramiques (7, 8) présentant chacun une cavité (13) contenant au moins partiellement la fermeture respective,
  - des câbles électriquement conducteurs (9, 10) présentant une première extrémité (11) fixée à un conducteur d'alimentation de courant respectif (5, 6), lesdits câbles s'étendant vers l'extérieur par une ouverture percée dans le culot en question (7, 8) transversalement au conducteur d'alimentation de courant en question (5, 6), caractérisée en ce que chaque lampe céramique comporte
  - un canal (12) qui est accessible depuis la cavité (13) du culot et dans lequel est logé le conducteur d'alimentation de courant concerné,
  - un évidement (14) transversal au canal (12), dans lequel est logé la première extrémité (11) du câble en question (9), ledit évidement (14) croisant le canal (12) à quelque distance de la cavité (13),
  - un alésage (15) qui est transversal à l'évidement (14) et au canal (12) et dans lequel l'évidement croise le canal et dans lequel le câble électrique (9, 10) est fixé au conducteur d'alimentation de courant (5, 6).

2. Lampe électrique selon la revendication 1, caractérisée en ce que les culots entourent la fermeture concernée latéralement et circonférentiellement.

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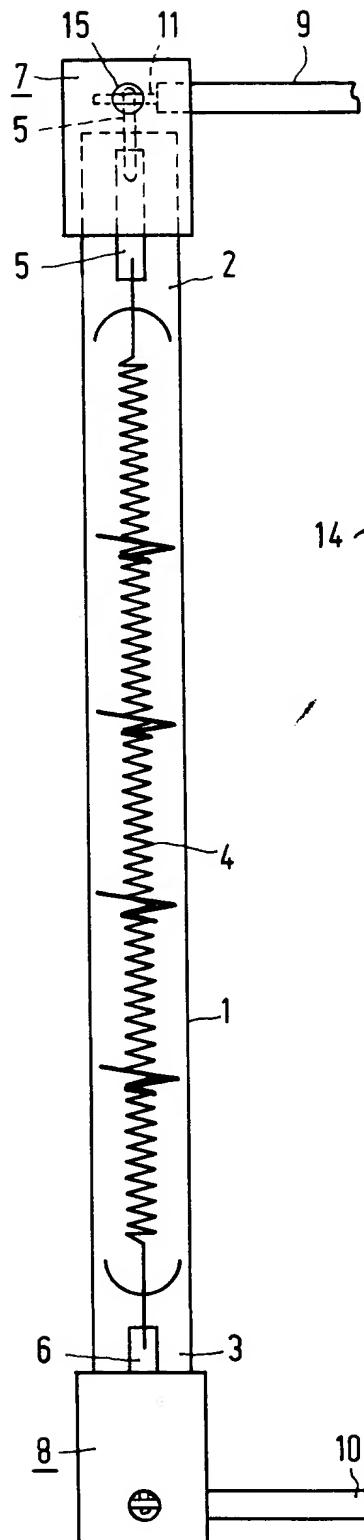


FIG.1

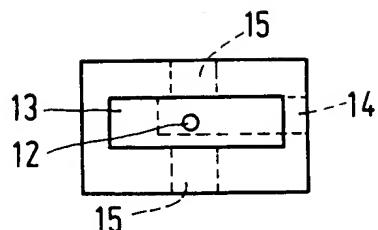


FIG. 2

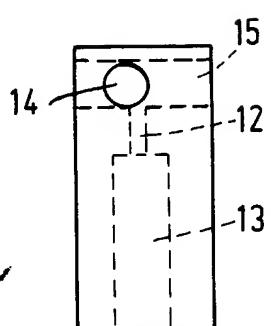


FIG. 3

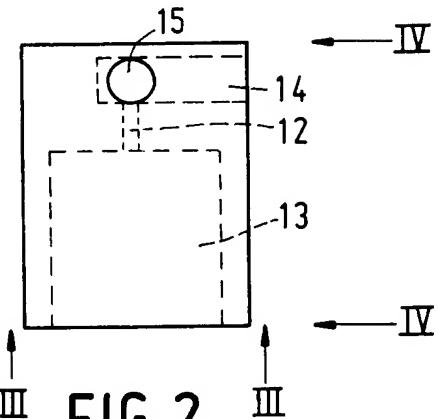


FIG. 4